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Job No.: CTCE/BBMP/W.No.12/KRIDL/WMM/AIV/2015-16

17.02.2015

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Improvements and asphalting to Kammagondanahalli Main Road from SM Road to Sri Rama Temple in Shettyhalli Ward No. 12, SSD, BBMP, Bangalore.
Reference	EE/DD/WO/438/2012-13 Dated: 08.03.2013
Sample ID	WMM Layer
Type of Mix	Wet Mix macadam
Date of Testing	17.02.2015

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	389	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	86	90	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	299	
4	Aggregate Impact value = percent fines	22.34	23.14	
	100* (W_2/W_1)%			22.74

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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17.02.2015

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Improvements and asphalting to Kammagondanahalli Main Road from SM Road to Sri Rama Temple in Shettyhalli Ward No. 12, SSD, BBMP, Bangalore.
Reference	EE/DD/WO/438/2012-13 Dated: 08.03.2013
Sample ID	WMM Layer
Type of Mix	Wet Mix macadam
Date of Testing	17.02.2015

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	382	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	83	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	299	
4	Aggregate Impact value = percent fines	21.73	22.14	
	100* (W_2/W_1)%			**21.93**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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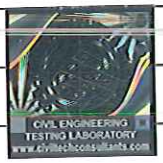
17.02.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of Work	Improvements and asphalting to Kammagondanahalli Main Road from SM Road to Sri Rama Temple in Shettyhalli Ward No. 12, SSD, BBMP, Bangalore.
Reference	EE/DD/WO/438/2012-13 Dated: 08.03.2013
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	17.02.2015



Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **11.25%**

Elongation Index = **13.36%**

Result : Combined Flakiness & Elongation index **24.61%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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ಕೆಣ್ಣಹಳ್ಳಿ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಎಸ್.ಎಂ ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
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Name of Work	Improvements and asphalting to Kammagondanahalli Main Road from SM Road to Sri Rama Temple in Shettyhalli Ward No. 12, SSD, BBMP, Bangalore.
Reference	EE/DD/WO/438/2012-13 Dated: 08.03.2013
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	17.02.2015

Result : Flakiness Index = **11.54%**

Elongation Index = **13.49%**

Result : Combined Flakiness & Elongation index **25.03%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
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Reference	EE/DD/WO/438/2012-13 Dated: 08.03.2013
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	17.02.2015

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **11.18%**

Elongation Index = **13.51%**

Result : Combined Flakiness & Elongation index **24.69%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.12/KRIDL/WMM/S-T/2015-16 17.02.2015

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Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of Work	Improvements and asphalting to Kammagondanahalli Main Road from SM Road to Sri Rama Temple in Shettyhalli Ward No. 12, SSD, BBMP, Bangalore.
Reference	EE/DD/WO/438/2012-13 Dated: 08.03.2013
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	17.02.2015

Result : Flakiness Index = **11.62%**

Elongation Index = **13.45%**

Result : Combined Flakiness & Elongation index **25.07%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

QUALITY CONTROL REPORTS FOR

BITUMINOUS MACADAM

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T-2377

Job No.: CTCE/BBMP/W.No.12/KRIDL/CSR-02/754/QB(BM)/2015-16 23.03.2015

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

*CUSTOMER	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
*AGENCY	:	**Technical Manager (West),** KRIDL, PIU, Bangalore.
*NAME OF THE WORK	:	Improvements and asphalting to Kammagondanahalli Main Road from SM Road to Sri Rama Temple in Shettyhalli Ward No. 12, SSD, BBMP, Bangalore.
REFERENCE	:	EE/DD/WO/438/2012-13 Dated: 08.03.2013
*SAMPLE ID	:	Bitumen
DATE OF SAMPLING	:	21.03.2015
DATE OF TESTING	:	23.03.2015

The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	84	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	50	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	292	Min. 220

*Information is furnished by the Customer/Representative.

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VISHWANATH .C
Quality Manager

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Job No: CTCE/BBMP/W.No.12/KRIDL/BM/AIV/2015-16

23.03.2015

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Improvements and asphalting to Kammagondanahalli Main Road from SM Road to Sri Rama Temple in Shettyhalli Ward No. 12, SSD, BBMP, Bangalore.
Reference	EE/DD/WO/438/2012-13 Dated: 08.03.2013
Source / Location	Hotmix Plant, Bangalore
Type of Mix	Bituminous Macadam
Date of Testing	23.03.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	81	83	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	300	
4	Aggregate Impact value = percent fines	21.26	21.67	
	100* (W_2/W_1)%			21.47

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Macadam is 30%

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23.03.2015

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Improvements and asphalting to Kammagondanahalli Main Road from SM Road to Sri Rama Temple in Shettyhalli Ward No. 12, SSD, BBMP, Bangalore.
Reference	EE/DD/WO/438/2012-13 Dated: 08.03.2013
Source / Location	Hotmix Plant, Bangalore
Type of Mix	Bituminous Macadam
Date of Testing	23.03.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	384	386	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	300	
4	Aggregate Impact value = percent fines	21.88	22.28	
	100* (W_2/W_1)%			22.08

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Macadam is 30%

Note:

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of Work	: Improvements and asphalting to Kammagondanahalli Main Road from SM Road to Sri Rama Temple in Shettyhalli Ward No. 12, SSD, BBMP, Bangalore.
Reference	: EE/DD/WO/438/2012-13 Dated: 08.03.2013
Technical Reference	: IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	: Bituminious Macadum
Date of Testing	: 23.03.2015

Flakiness Index = **11.18%**

Elongation Index = **13.25%**

Result : Combined Flakiness & Elongation index **24.43%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Macadam is 30%

Note:

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
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Reference	: EE/DD/WO/438/2012-13 Dated: 08.03.2013
Technical Reference	: IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	: Bituminious Macadum
Date of Testing	: 23.03.2015

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Flakiness Index = **11.61%**

Elongation Index = **13.42%**

Result : Combined Flakiness & Elongation index **25.03%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Macadam is 30%

Note:

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23/3

ಸಹಾಯಕ ಕಾರ್ಯ ಪಾಲಕ ಅಭಿಯಂತರರು
ಶೆಟ್ಟಿಹಳ್ಳಿ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
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Job No: CTCE/BBMP/W.No.12/KRIDL/BM/Stripping/2015-16

24.03.2015

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the work	Improvements and asphalting to Kammagondanahalli Main Road from SM Road to Sri Rama Temple in Shettyhalli Ward No. 12, SSD, BBMP, Bangalore.
Reference	EE/DD/WO/438/2012-13 Dated: 08.03.2013
Type of Mix	Bituminous Macadam
Date of Testing	24.03.2015

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	2.6	2.73	97.27
2	2.7		
3	2.9		

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Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Macadam is 95%

Note:

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→ Any Query regarding the report must be reported within 30 days from the date of testing.

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Job No: CTCE/BBMP/W.No.12/KRIDL/BM/Sp_Wa/2015-16

24.03.2015

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Improvements and asphalting to Kammagondanahalli Main Road from SM Road to Sri Rama Temple in Shettyhalli Ward No. 12, SSD, BBMP, Bangalore.
Reference	EE/DD/WO/438/2012-13 Dated: 08.03.2013
Source / Location	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	24.03.2015

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 2	
1	Weight of aggregate suspended in water with the basket	W_1 g	2011	2012	2013	
2	Weight of basket suspended in water	W_2 g	750	750	750	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1261	1262	1263	
4	Weight of saturated surface dry aggregate in air	W_3 g	2023	2024	2025	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	762	762	762	
6	Weight of oven dried aggregate	W_4 g	2007	2009	2011	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.634	2.636	2.639	2.636
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.690	2.689	2.689	2.689
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.80%	0.75%	0.70%	0.75%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Macadam is 2.0%

Note:

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Job No.: CTCE/BBMP/W.No.12/KRIDL/BM/Bitumen/2015-16

24.03.2015

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MACADAM MIX

AS per IRC:SP:-1984

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, PIU, Bangalore.
NAME OF THE WORK	Improvements and asphalting to Kammagondanahalli Main Road from SM Road to Sri Rama Temple in Shettyhalli Ward No. 12, SSD, BBMP, Bangalore.
REFERENCE	EE/DD/WO/438/2012-13 Dated: 08.03.2013
SAMPLE I/D	Kammagondanahalli Main Road, Ward No. 12
DATE OF TESTING	24.03.2015

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	482	483
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	18	17.00
7. Bitumen content in %	3.60	3.40
8. Average	**3.50**	

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